

REMARKS

In the final Office Action mailed May 2, 2007, claims 1-29 were rejected under §103 as being unpatentable over Millio in view of Asselin and Taylor. In addition, the Office Action Summary indicates that the Specification is objected to. However, the Detailed Action does not mention the objection. Consequently, the undersigned believes that the checked box in the Office Action Summary is left over from the first Office Action and the typographical error pointed out by the Examiner in that Action was adequately corrected in the first Response. In the present Response, no amendments have been made.

The Applicant acknowledges and appreciates the withdrawal of the §101 rejection.

With respect to the continued rejection of the claims under §103, the Applicant continues to emphasize that the FlashCopy function to which the present invention pertains is different from the concurrent copy discussed in some of the cited references. The concurrent copy function enables a copy of data to be made while an application is updating that data. The copy is "in a consistent form, as it existed before the updates took place ... as though the updates had not occurred." (Asselin, pg. 1) Copy data concurrently with normal operations. By contrast, when the FlashCopy function is invoked, FlashCopy relationship is established between a source volume (to which a copy of the data has been transferred from the primary storage unit, as explained in paragraph 23 of the Specification) and a target volume, thereby providing a mapping of the source volume and target volume to allow a point-in-time copy (based on consistency groups) of the source volume to be copied to the target volume. The operation is nearly instantaneous and copies are "immediately" available for read and write access. Consequently, the Applicant reiterates that the cited combination, because it is directed towards a different function, cannot render the claims obvious.

On page 3 of the current Office Action, the Examiner refers to the Applicant's assertion made in the previous Response that "in none of the cited references are multiple volumes the focus of the attention." The Applicant maintains that assertion. The Office Action cites Milillo to the effect that Fig. 2 and the related discussion pertains

to just a single PPRC volume pair but that additional pairs may be included. The implication is that the invention of Milillo is applicable (although not exclusively so) to a single-pair environment. However, the problem towards which the present invention is directed pertains to an environment in which a consistency group may be distributed over many storage volumes, possibly in many storage controllers (Specification, paragraph 26). In such an environment, the FlashCopy command may not be executed simultaneously by all of the source volumes. As discussed in paragraphs 26 and 27, that may not present a problem as long as no write request is received or no event occurs which interrupts the FlashCopy operation. If, however, such an event occurs, the consistency group of source volumes may become inconsistent. Moreover, because the FlashCopy operation may have been completed between one or more (but not all) of the source volumes and the corresponding target volumes, the target volumes are no longer consistent, containing a mix of both old and updated data. If a failure occurs at this time, data recovery may not be possible. The present invention addresses the problem by making sure that all of the source volumes have been successfully prepared for the FlashCopy operation before committing to complete the operation. If preparations are successful, the entire prior consistency group in the target volumes is replaced; if preparations are unsuccessful, the entire prior consistency group in the target volumes is maintained and can be used to recover from a subsequent failure.

There is no suggestion in any cited reference to combine their respective teachings and, even if the teachings were combined, no such combination teaches the claimed invention. Furthermore, the motivation cited on page 7 of the Office Action (citing Asselin and Taylor), are exceedingly broad "motivations" that could apply to a significant number of data-related inventions. But, the cited motivation does not address the problem to which the present invention is directed and therefore is insufficient to support an obviousness rejection.

As substantially the same grounds for rejection were asserted against all of the independent claims, the foregoing comments apply equally to those claims. In addition,

the Applicant respectfully asserts that the dependent claims are further allowable based on the allowability of the respective independent claims.

For the foregoing reasons, the claims are believed to be allowable, the Application is believed to be in condition for allowance and a favorable Advisory Action is requested. The Examiner is encouraged to contact the undersigned by telephone if a conversation would expedite prosecution of this case.

This constitutes a request for any needed extension of time. No fee is believed to be due in this instance. The undersigned hereby authorizes the charge of any deficiency of fees submitted herewith, or the credit of any overpayment, to deposit account number 09-0449.

Respectfully Submitted,

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cc: IBM- Tucson